13 Trumpington Street
Cambridge
August 21, 1863

Sir,

My Theory of the Zodiacal Light is given in two communications to the Philosophical Magazine, one in the Number for February 1863 and the other in that for March 1863. I forward to you by this Post copies of these papers.

All that I have published on "Shooting Stars" is contained in a Paper entitled "On the Zodiacal Light, & on Shooting Stars" in the recently published Volume

of Reports and Proceedings of the British Association at the Meeting at Cambridge last year.* What I have said here is very brief and incomplete, my views being then not in a mature state for publication. I have since pursued the subject farther & hope ere long to be able to produce something more to the purpose.

I am, Sir,

Yours very obediently

J. Challis

Dr Cranmick

Sections.

Transactions of the

* p. 12 of

1181.

Astronomer
Plane Neptune

13 Trumpington Street
Cambridge

January 25, 1862

Dear Sir,

I beg to thank you for the favour of a copy of your work entitled "A Hand-book of Descriptive and Practical Astronomy."

I have only had time to glance through the pages, but I have seen enough to convince me that you have succeeded in presenting the Science of Astronomy in a very attractive form, &

that the work embraces a vast variety of subjects of great interest and utility. The plates and diagrams are beautifully executed and give quite a novel character to the book. I am glad to learn that you submitted portions of the work in its progress through the press to competent astronomical authorities, as it so often happens that publications calculated to spread a taste for astronomy are disfigured by inaccuracies.

I take the liberty of referring to one matter* which caught my eye, which it would

* in page 132.

be desirable to correct in case of the publication of another edition. It is generally supposed that the Earth's atmosphere appears blue because it transmits blue rays more readily, or absorbs them in less degree, than the other rays. So also ~~the~~ the vapour held in the air and not in the state of cloud, has the property of transmitting red rays more freely than others, and consequently ~~consequently~~ absorbs them in less degree than it absorbs ~~the~~ others. This accounts for the red of the evening sky, the direct or indirect rays of the sun about sun-set having to pass through strata of the air usually charged with vapour, & therefore allowing more red rays to pass than

rays of the other colours. This cause operates to produce the red appearance of the moon when totally eclipsed.

The explanation of aberration in p. 167 is, I am aware, that which is usually given, but it is incomplete. I have given the complete explanation in a communication to the Philosophical Magazine for June 1855. Any one that has much to do with practical astronomy knows that he is required to determine with as much accuracy as possible the angular direction of a line joining two points, one of which is the optical centre of the object-glass and the other a point in the field of view usually marked by the intersection of two wires, or reperable thereto. The reason is, that the light by which he sees a celestial object at the instant of observation passes through these points. But by reason of the Earth's motion the line joining the points differs in direction from the course of the ray. This alone is the cause of aberration.

Consequently the explanation of aberration is not complete without reference to those two points which instrumentally determine the direction in which the astronomer aims or points his telescope. The illustration drawn from the cannon ball passing through a ship in motion is quite complete; if the holes it makes in the ship's sides be taken to represent the two points above mentioned.

Excuse the liberty I have taken in making these remarks, and believe me,

Yours very faithfully

J. Challis

G. F. Chambers Esqr

James Challis,
Born at Braintree, Essex Dec 12/1803
Died at Cambridge Dec 3 1882
English astronomer + physicist
Director of Cambridge observatory

D First to observe
planet Neptune

Jas Challis
1803 – 1882
Astronomer

D

CHALLIS, I

A.L.S. dated Aug. 21,1863
to Dr. Cranswick